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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/276,273	03/25/1999	TYLER LOWREY	2024.17	1882

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ENERGY CONVERSION DEVICES, INC.
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EXAMINER
CAO, PHAT X

ART UNIT	PAPER NUMBER
2814	

DATE MAILED: 04/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/276,273	Applicant(s) LOWREY ET AL.	
	Examiner Phat X. Cao	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 January 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *178-246* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *See Continuation Sheet* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Continuation of Disposition of Claims: Claims rejected are 178-182,185,187,188,193,195-206,209,211,212,217,219-223,228-236,242,243,245 and 246.

DETAILED ACTION

1. The cancellation of claims 84-177 in Paper No. 18 is acknowledged.

Claim Rejections - 35 USC § 112

2. Claim 199 recites the limitation "said protruding portions" in line 4. There is insufficient antecedent basis for this limitation in the claim.

3. Claim 223 recites the limitation "said protruding portions" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 231-232, 236, 242-243, and 245-246 are rejected under 35 U.S.C. 102(e) as being anticipated by Gonzalez et al (US. 5,854,102).

Gonzalez (Fig. 8) discloses a memory element, comprising: a conductive sidewall spacer 38 of polysilicon formed over a sidewall surface of a dielectric layer 20; a programmable resistance material 46 including a chalcogen element in electrical communication with the conductive sidewall spacer 38, wherein substantially all of the electrical communication inherently occurs through the top surface or top edge of the conductive sidewall spacer 38 because the top surface or top edge of the conductive sidewall spacer is in direct contact with the programmable reisistance material 46 (column 7, lines 64-66).

6. Claims 178-182, 185, 187, 193, 195-206, 209, 211, 217, 219-223, 228-230, 231-236, 242-243, and 246 are rejected under 35 U.S.C. 102(e) as being anticipated by Doan et al (US. 6,423,621).

Doan (Fig. 13) discloses a memory element, comprising: a first dielectric 116 of silicon oxide; a conductive layer (102,114) having a raised portion 114 formed over the sidewall surface of the first dielectric layer 116; a second dielectric layer 124 of SiO formed over the conductive layer; and a programmable resistance material 120 made of chalcogenide (column 7, lines 59-61) in electrically communication with the conductive layer (102,104), wherein the protruding portion 114 of the conductive layer is formed in a via having an area contact of approximately 1000 angstroms (column 7, lines 18-20), and wherein all of the electrical configuration inherently

occurs through the top surface 118 of the conductive layer because the top surface 118 is in direct contact with the programmable resistance material 120.

7. Claims 231-236, 242-243 and 246 are rejected under 35 U.S.C. 102(e) as being anticipated by Ovshinsky (US. 5,687,112).

Ovshinsky (Fig. 1) discloses a memory element, comprising: a conductive sidewall spacer 14 formed over a sidewall surface of a via formed in a dielectric layer 18; a programmable resistance memory material 36 made of chalcogenide in electrical communication with the conductive sidewall spacer 14 made of tungsten, wherein the top surface includes a protruding portion 16 extending to a terminal end adjacent the programmable resistance material 36, and wherein all of the electrical communication inherently occurs through the top surface or top edge of the protruding portion 16 because the top surface or top edge of the protruding portion is in direct contact with the programmable resistance material 36.

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 178-182, 185, 187-188, 195-206, 209, 211-212, 219-223, 228-230, 231-236, 242-243, 245-246 are rejected under 35 U.S.C. 102(b) as being anticipated by Ovshinsky et al (US. 5,414,271).

Ovshinsky (Fig. 1) discloses a memory element, comprising: a first dielectric layer 20 of silicon oxide; a conductive layer (32,34) formed over the sidewall surfaces of the opening formed in the first dielectric layer 20; a second dielectric layer 39 of silicon oxide formed over the conductive layer; a programmable resistance memory material 36 made of chalcogenide, wherein the conductive layer (32,34) having protruding portions extending to an end adjacent the memory material 36, and wherein all of the electrical communication inherently occurs through the top surface or top edge of the protruding portion because the top surface or top edge of the protruding portion is in direct contact with the programmable resistant material 36.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 178-182, 185, 187-188, 195-197, 200-206, 209, 211-212, 219-221, 228-230 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gonzalez (US. 5,854,102).

Gonzalez (Fig. 8) discloses a memory element, comprising: a first dielectric layer 20 made of silicon dioxide; a conductive layer 38 of polysilicon in electrically communication with a programmable resistance material 46 made of chalcogenide, and vertically disposed on the sidewall surface of the opening formed in the first dielectric layer 20, wherein all of the electrical

communication inherently occurs through the top surface of the conductive layer 38 because the top surface of the conductive layer 38 is in direct contact with the programmable resistance material 46.

Gonzalez's Fig. 8 does not disclose a second dielectric layer formed over the conductive layer 38.

However, Gonzalez further discloses in Fig. 25A the well known feature of forming a second dielectric layer 124 of silicon dioxide over the conductive layer in order to isolate the programmable resistance material from the adjacent electronic elements.

12. Claims 193, 198-199, 217, 222-223, and 233-235 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gonzalez et al in view of Doan et al (US. 6,423,621).

Gonzalez does not disclose the conductive layer 38 having a raised portion extending to an end adjacent the memory material.

However, Doan (Fig. 12) teaches the forming of the electrical contact 102 having a raised portion 114 in contact with a programmable resistance material 120. Accordingly, it would have been obvious to modify the electrical contact of Gonzalez by forming a raised portion with the structure as set forth above because according to Doan, such electrical contact would provide denser memory arrays and would minimize the power requirements for memory cells (column 3, lines 1-5).

Double Patenting

13. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321© may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

14. Claims 178-182, 185, 187-188, 193, 195-206, 209, 211-212, 217, 219-223, 228-230, 231-236, 242-243, and 245-246 are provisionally rejected under the judicially created doctrine of double patenting over claims 1-21 and 32-44 of copending Application No. 09/813,267. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: both applications claim a memory element comprising a conductive layer of chalcogenide in electrical communication with the programmable resistance memory material, wherein the conductive layer having a protruding portion extending to an end adjacent the memory material. Moreover, even though claim 198, for example of the instant application 09/276,273 does not use exactly the same word, for example, "protruding portions", and the copending application recites "a raised portion", that shows no different meaning between these two elements. The facts are that the claims of the copending application 09/276,273 have claimed the same goal and are not distinguished from each other.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phat X. Cao whose telephone number is (703) 308-4917. The Examiner can normally be reached on Monday through Thursday. If attempts to reach the Examiner by telephone are unsuccessfully, the Examiner's supervisor, Wael Fahmy, can be reached on (703) 308-4918.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956. Group 2800 fax number is (703) 308-7722 or (703) 308-7724.

PHAT X. CAO
PRIMARY EXAMINER

PC
April 4, 2003